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UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

INTERMOUNTAIN FOREST & RANGE EXPERIMENT STATION
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COMBINED VERTICAL AND HORIZONTAL STEREOGRAMS

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INTRODUCTION

Few experienced photo-interpreters would consider working in new territory without reference to stereograms. Whether used in an organized series or in the more elaborate form of a Photo-Interpretation Key, stereograms are needed (1) as training aids in teaching the interpreter to identify new objects or ground conditions or (2) as reference material so that the interpreter may "keep his eye in" by periodic study.

Vertical, oblique, and horizontal photos have all been used in preparing stereograms and occasionally two types of stereograms have been included in the same Interpretation Key. Most frequently, the stereograms are prepared from vertical aerial photographs accompanied by narrative descriptions. Occasionally, ground shots are added to aid the interpreter in visualizing ground conditions.

A series of stereograms recently prepared by the Intermountain Forest and Range Experiment Station, Ogden, Utah, combines vertical aerial views with horizontal pairs taken with a stereo camera, allowing the interpreter to study both at one orientation of his stereoscope. This combination of stereograms helps him to bridge the gap between the back log of horizontal images acquired through field experience, and the store of vertical images he must have to become a successful photo interpreter. The student, who seldom has much field experience, finds these stereograms a substitute for the mental images he lacks. The limited amount of narrative description and photogrammetric data of the forest stand carried on the same photographic prints facilitate their use as training aids.

It is not overly difficult to prepare these stereograms and the small additional expense is well repaid by their superior value as training aids.

AERIAL PHOTO STEREOGRAM 11

Loc: White River N. F.
north of New Castle, Colo.
Elev: 9000'

Photos:

Date: 10/4/50
Scale: 1:18,000
F.L. 8-1/4"
Photo base: 3.3"
Par.fac: 3.7' per .001"



1



2

1. Aspen, sawtimber, A9aM
Tot.ht. 65' Cr.dia. 18' Cr.cov. 65% Slope NW 0 - 5%
12 - 16" DBH aspen with scattered spruce and alpine fir
2. Aspen, poles, A8W
Tot.ht. 50' Cr.dia. 14' Cr.cov. 95% Slope SE 0 - 10%
8 - 10" DBH aspen with occasional 12" tree

Original stands probably spruce or alpine fir and most stands contain a scattering of these species

AERIAL PHOTO STEREOGRAM 16

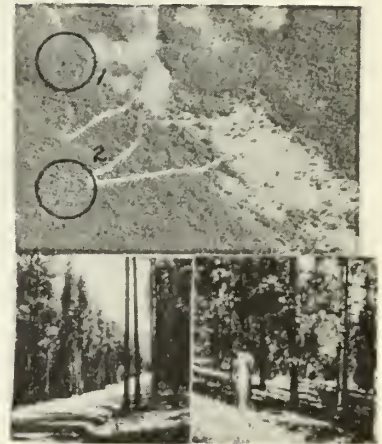
Loc: White River N. F.
south of Minturn, Colo.
Elev: 9,000'

Photos:

Date: 10/12/50
Scale: 1:20,500
F.L. 8-1/4"
Photo base: 3.4"
Par.fac: 4.1' per .001"



1



2

1. Lodgepole pine, poles, LP8W
Tot.ht. 60' Cr.dia. 8' Cr.cov. 85% Slope NE 0 - 10%
Stand large poles 8 - 10", very dense
2. Lodgepole pine, poles, LP8M
Tot.ht. 55' Cr.dia. 12' Cr.cov. 65% Slope NE 10 - 20%
Stand 6" - 11" DBH with occasional 12" tree. Old burned snags and logs

Forest Survey, IF&RES, U. S. Forest Service, Ogden, Utah



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Faint, illegible text in the bottom right corner.

PREPARATION OF STEREOGRAMS

Select the forest stand to be illustrated and pin point it on a pair of aerial photos. Preferably, this stand should lie between principal and conjugate principal points of the pair of photos and not more than 3 inches from the center line of the photo strip. Locate the point on the ground and photograph the stand using a common stereo camera and high-speed black and white film. It is well to remember that the stereo effect will be most pronounced close to the camera and negligible beyond 100 feet.

The film is then developed and contact prints are made on single weight semigloss paper. Tone and contrast should resemble the aerial photos to be used in the stereogram as closely as possible.

Set up the selected pair of aerial photos with common principal and conjugate principal points in a straight line and with separation of approximately 2.3 to 2.4 inches. Measure and record average total height, average crown diameter and crown coverage, and any other pertinent photogrammetric data. With a compass, circle the pin points marking the selected stands. Use a 1-acre or 5-acre circle. Number the stands.

Prepare a mask on white paper by pin pointing the corners of the 1.4- by 1.9-inch openings. Experience has shown this size works very well with two illustrated points per stereogram. Type the appropriate data on this mask. Now cut out the marked openings and mount the mask over the stereo pair with a few drops of rubber cement. On the mask and directly below the openings mount the trimmed contact prints taken with the stereo camera. Check their position to make certain stereo effect is not reversed. Due to the size of these ground photos, a maximum of 2 points only can be illustrated per stereogram.

The assembled stereogram is then copied 1:1 scale and contact prints are made on glossy paper. Photographic images will appear sharper and be more readable on this type paper than on the semimatte prints used in mapping.

Arrangements to obtain copies of the 18 stereograms prepared can be made through the Director of the Intermountain Forest and Range Experiment Station at Ogden, Utah.

